



KANSAS DEPARTMENT OF HEALTH & ENVIRONMENT

PROCEDURE FOR THE PRESSURE MECHANICAL INTEGRITY TEST FOR THE CASING OF AN UNDERGROUND HYDROCARBON STORAGE WELL

Procedure #: UICLPG-17
(2-05)

Narrative:

The casing pressure test evaluates the mechanical integrity of the well casing. The well casing has mechanical integrity if there are no significant leaks in the casing. The mechanical integrity of the well casing is evaluated by conducting a hydraulic pressure test and monitoring for a pressure loss. The permittee shall schedule the test to allow KDHE the opportunity to witness the test.

The permittee shall submit a test plan to KDHE for review and approval at least 30 days prior to test commencement. The permittee shall include in the test plan a prognosis for the test, a schedule for conducting the test, a diagram of the well configuration, and a waste-handling contingency plan in the event that the well fails the test. K.A.R. 28-45-16 establishes the requirements for the mechanical integrity test.

Procedure:

1. The permittee shall receive plan approval from KDHE before commencing the test.
2. Depressurize the well.
3. Remove any tubing strings from the well.
4. Set a retrievable bridge plug or packer immediately above the cavern for the purpose of pressure testing the casing. The setting depth shall be approved by KDHE. The test must demonstrate integrity to a depth at least equal to the top of the salt. Provide a description of the packer or the plug. The packer or plug must be capable of making a tight seal to allow the casing to be hydraulically pressure tested.
5. Commence the casing pressure test. Monitor the liquid pressure placed on the casing for the purpose of determining integrity of the casing. Demonstrate to KDHE that the casing is liquid filled. The permittee may demonstrate the presence of liquid in the casing at the end of the test.
6. Verify that the well is in thermal equilibrium before commencing the test.
7. Vent as much air as is feasible from the casing after the casing has been pressurized. Adjust the pressure in the casing, if necessary. Isolate the casing from all external artificial sources capable of introducing pressure to the casing after the casing has been pressurized for the test.
8. Calculate casing test pressures. The minimum wellhead casing test pressure shall be the maximum allowable operating injection pressure at the wellhead.
9. Provide a description of the pressure gauge to be used to monitor the test pressure. The gauge must have a scale such that the test pressure is 40%-60% of full scale. The scale shall measure pressure in increments of no more than 2 pounds per inch (psi) per division. Demonstrate that the gauge is functioning properly by providing documentation showing that the gauge has been tested for accuracy. Documentation shall include a description of the test, the test date, and the amount of error in gauge accuracy. If necessary, provide documentation that the gauge has been recalibrated.
10. Conduct the test for a minimum one (1) hour.

11. Submit the KDHE form, Pressure Mechanical Test Report (UICLPG-15), documenting that the well casing had mechanical integrity at the time of the test. A pressure loss of equal to or less than 5% of the initial test pressure is a satisfactory test. A pressure increase of greater than 5% of the initial test pressure is not acceptable and may indicate the well has not reached thermal equilibrium.
12. Remove the well from service if a satisfactory test is not obtained. Submit a plan for corrective action to KDHE for review and approval. The well shall remain out of service until corrective action has been taken and a satisfactory mechanical integrity test has been conducted. Determine the location of the casing leak and evaluate any impact to the environment. The permittee may be required to submit an environmental remediation plan, including corrective action and an implementation schedule, to KDHE for review and approval. The permittee shall not commence corrective action until plan approval has been obtained from KDHE.
13. KDHE will witness the casing pressure tests performed by the facilities as time and work load permit. In the event that KDHE is not available to witness a casing pressure test, the permittee may then perform the casing pressure test in accordance with KDHE procedure UICLPG –15.

Failure to follow the KDHE approved casing pressure test plan may result in invalidation of the test and removal of the well from service until the casing pressure test is rescheduled and conducted to the satisfaction of KDHE.